

DATABANK

CHEMICAL PROFILE

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Propionic acid

USES

Most propionic acid is used as a preservative for animal feed and grains for human consumption as it inhibits the growth of mold and some bacteria. It is also used as an intermediate to manufacture herbicides. Other major uses are in cellulose acetate, calcium, sodium, dimethylol and trimethylolpropane propionates.

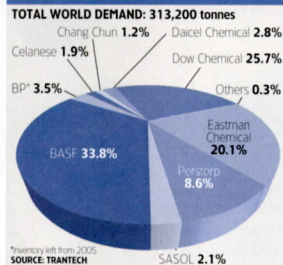
Worldwide, about 33.8% is used in grain preservatives, 23.5% in animal feed preservatives, 21.8% in herbicides, 15.3% in cellulose acetate propionate, 1.6% in fungicides, 1.5% in flavor and fragrances, 0.6% in pharmaceuticals and 0.3% in packaging.

SUPPLY/DEMAND

Global capacity for propionic acid stood at 349,000 tonnes/year in 2006, 166,800 tonnes of which was in the US, followed closely by Western Europe, with 130,000 tonnes. Asia Pacific, excluding Japan, was a distant third with 35,180 tonnes/year. Japan and South Africa had capacities of 10,000 tonnes/year and 7,000 tonnes/year, respectively.

The consumption pattern was split 36.1%, 33.6%, 9.8%, 7.1%, 3.6% and 3% between Western Europe, the US, Asia-Pacific, Canada, Japan and Latin America, respectively.

GLOBAL MARKET SHARE FOR PROPIONIC ACID, 2006



The US was the largest net exporter with 43,600 tonnes/year and Canada was the largest net importer with 22,100 tonnes/year. However, the Canada numbers are misleading because large quantities of propionic acid are imported from the US and converted to salts and derivatives, which are then exported back to the US.

PRICES

The price of propionic acid depends on its purity. August contracts for food grade with 99.5% purity was negotiated between 58–63 cents/lb (41–45 euro cents/lb) in the US, €1.01–1.06/kg in Europe and \$1.29–1.36/kg, in Asia.

TECHNOLOGY

Most producers use the oxo process, which involves reacting ethylene and carbon monoxide to produce the intermediate propionaldehyde. Further oxidation yields propionic acid.

Large amounts of propionic acid were once produced as a by-product of acetic acid in the liquid phase oxidation of n-butane, but changes in the way acetic acid is made have made this a very minor source of propionic acid today.

Minor quantities of propionic acid are also produced biologically as its coenzyme A ester. Bacteria from propionibacterium produces propionic acid as the end product of the ester through anaerobic metabolism.

HEALTH AND SAFETY

The chief danger from propionic acid is chemical burns from contact with the concentrated liquid. Propionic acid is readily metabolized in the body.

OUTLOOK

The major markets for propionic acid are maturing and no significant new uses appear to be on the horizon. Propionate salts may be weakened by a trend towards natural foods without preservatives. The exception is Asia-Pacific, Asia and the Middle East.

GLOBAL PROPIONIC ACID CAPACITY (2006), '000 TONNES/YEAR

Company	Location	Capacity
BASF	Ludwigshafen, Germany	80
BASF-Sinopec	Nanjing, China	30
Chang Chun Petrochemical	Malliao, Taiwan	4
Celanese	Pampa, Texas, US	6.8
Daicel Organic Chemical	Ohtake, Japan	10
Dow Chemical	Texas City, Texas, US	90
Eastman Chemical	Kingsport, Tennessee, US	50
	Longview, Texas, US	20
Fushun No. 3	Fushun, China	0.6
Perstorp	Stenungsund, Sweden	50
SASOL	Secunda, South Africa	7
Shanghai No. 1	Shanghai, China	0.5

SOURCE: TRANTECH CONSULTANTS

The global demand growth is forecast at 2.5%/year to 2010, the highest growth rates being expected in Asia Pacific (6%/year) and Asia and the Middle East (4.5%/year). The growth in other regions is estimated at 3%/year for Australia and New Zealand, and Latin America, 2.8%/year for Africa, 2.5%/year for Eastern Europe, 2.4%/year for Mexico, about 2%/year for the US and Western Europe, and 1.5%/year for Japan.

Perstorp started a 50,000 tonne/year stand-alone plant in the second quarter of 2006. Celanese will cease production at its Pampa, US, plant in 2008. BP closed its Hull, UK, plant in 2005. Supplies of propionic acid will remain more than adequate for 2010 and beyond, says TranTech.

BASF plans to raise capacity in Germany and China by 30,000 tonnes/year and 9,000 tonnes/year, respectively, by mid-2009.

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